

IN THE CLAIMS:

**Marked up Version of the Pending Claims Under 37 C.F.R. § 1.121(c)(1)(ii):**

A clean version of the pending claims pursuant to 37 C.F.R. § 1.121(c)(3) is provided hereinbelow after the following marked up version of the amended claims.

Please amend claims 3, 10, 13-17, and 19 as follows and in accordance with 37 C.F.R. § 1.121(c)(1)(ii), by which Applicants submit the following marked up version only for claims being changed by the current amendment, wherein the markings are shown by brackets (for deleted matter) and/or underlining (for added matter):

3. (Once Amended) The gate stack structure as recited in Claim 1, wherein:  
said nonconductive material is composed of undoped silicon dioxide; and  
the spacer is [integral with] made from the same material as the undoped silicon dioxide cap.

10. (Once Amended) A gate stack structure situated over a base monocrystalline silicon layer, said gate stack structure comprising:

a gate oxide layer on said base monocrystalline silicon layer;

a polysilicon gate layer on said gate oxide layer;

a layer of tungsten silicide on said polysilicon gate layer;

an undoped silicon dioxide cap on said layer of tungsten silicide;

a spacer over a lateral side of the gate layer and in contact with said base monocrystalline silicon layer, said spacer being composed of [ of] a material that is one of silicon nitride and undoped silicon dioxide and being [integral with] made from the same material as the undoped silicon dioxide cap, wherein the lateral side of the gate layer is oriented perpendicular to said base monocrystalline silicon layer;

a contact plug in contact with said base monocrystalline silicon layer and being:

composed of a second conductive material; and

situated adjacent to the gate layer; and

a layer of doped silicon dioxide being composed of a material selected from the group consisting of BPSG, PSG, and BSG, and being situated over said spacer, over said undoped silicon dioxide cap, and in contact with said contact plug.

13. (Once Amended) The gate structure as recited in Claim 11, wherein:  
said nonconductive material is composed of undoped silicon dioxide; and  
each said spacer is [integral with] made from the same material as a respective one  
of said undoped silicon dioxide caps.
14. (Once Amended) [A process] The gate structure as recited in Claim 11, wherein  
the semiconductor material is monocrystalline silicon.
15. (Once Amended) [A process] The gate structure as recited in Claim 11, wherein  
said refractory metal silicide layer is tungsten silicide.
16. (Once Amended) [A process] The gate structure as recited in Claim 11, wherein  
said layer of doped silicon dioxide layer is composed of a material selected from the group consisting  
of BPSG, PSG, and BSG.
17. (Once Amended) [A process] The gate structure as recited in Claim 11, wherein  
the spacer is composed of a material that is one of silicon nitride and undoped silicon dioxide.

19. (Once Amended) A gate structure comprising:  
a pair of gate stacks situated over a base monocrystalline silicon layer, each said gate stack comprising:  
a gate oxide layer on said base monocrystalline silicon layer;  
a polysilicon gate layer on said gate oxide layer;  
a layer of tungsten silicide on said polysilicon gate layer;  
an undoped silicon dioxide cap on said layer of tungsten silicide; and  
a spacer over a lateral side of each said gate stack and in contact with said base monocrystalline silicon layer, said spacer being composed of undoped silicon dioxide and being [integral with] made from the same material as the undoped silicon dioxide cap, wherein the lateral side of each said gate stack is oriented perpendicular to said base monocrystalline silicon layer;  
a contact plug in contact with said base monocrystalline silicon layer and being composed of a second conductive material, and being situated between said pair of gate stacks; and  
a layer of doped silicon dioxide over said spacer, over said undoped silicon dioxide cap, and in contact with said contact plug.

**Clean Version of the Pending Claims Under 37 C.F.R. § 1.121(c)(3)**

Claims 1-20, now pending, are submitted below in accordance with 37 C.F.R. § 1.121(c)(3), which presents a clean version of the entire set of pending claims in this single amendment paper:

- Sub  
C1
1. (Unchanged) A gate stack structure situated over a base semiconductor material layer, said gate stack structure comprising:
- a gate oxide layer on said base semiconductor material layer;
  - a gate layer, composed of a first conductive material, on said gate oxide layer;
  - a layer of refractory metal silicide on said gate layer;
  - an undoped silicon dioxide cap on said layer of refractory metal silicide;
  - a spacer over a lateral side of the gate layer and in contact with said base semiconductor material layer, said spacer being composed of a nonconductive material, wherein the lateral side of the gate layer is oriented perpendicular to said base semiconductor material layer;
  - a contact plug in contact with said base semiconductor material layer composed of a second conductive material, and being situated adjacent to the gate layer; and
  - a layer of doped silicon dioxide over said spacer, over said undoped silicon dioxide cap, and in contact with said contact plug.
- A3
2. (Unchanged) The gate stack structure as recited in Claim 1, wherein said nonconductive material is composed of silicon nitride.

C1  
conclor

3. (Once Amended) The gate stack structure as recited in Claim 1, wherein:  
said nonconductive material is composed of undoped silicon dioxide; and  
the spacer is made from the same material as the undoped silicon dioxide cap.

4. (Unchanged) The gate stack structure as recited in Claim 1, wherein the  
semiconductor material is monocrystalline silicon.

5. (Unchanged) The gate stack structure as recited in Claim 1, wherein said refractory  
metal silicide layer is tungsten silicide.

Sub  
C2

6. (Unchanged) The gate stack structure as recited in Claim 1, wherein said layer of  
doped silicon dioxide layer is composed of a material selected from the group consisting of BPSG,  
PSG, and BSG.

A3

7. (Unchanged) The gate stack structure as recited in Claim 1, wherein the spacer is  
composed of a material that is one of silicon nitride and undoped silicon dioxide.

8. (Unchanged) The gate stack structure as defined in Claim 1, wherein the first  
conductive material is polysilicon.

Sub  
C3

9. (Unchanged) A gate stack structure situated over a base monocrystalline silicon layer, said gate stack structure comprising:

a gate oxide layer on said base monocrystalline silicon layer;

a polysilicon gate layer on said gate oxide layer;

a layer of tungsten silicide on said polysilicon gate layer;

an undoped silicon dioxide cap on said layer of tungsten silicide;

a spacer over a lateral side of the gate layer and in contact with said base monocrystalline silicon layer, said spacer being composed of undoped silicon dioxide and being integral with the undoped silicon dioxide cap, wherein the lateral side of the gate layer is oriented perpendicular to said base monocrystalline silicon layer;

cont.  
AB

a contact plug in contact with said base monocrystalline silicon layer and being:

composed of a second conductive material; and

situated adjacent to the gate layer; and

a layer of doped silicon dioxide being composed of a material selected from the group consisting of BPSG, PSG, and BSG, and being situated over said spacer, over said undoped silicon dioxide cap, and in contact with said contact plug.

10. (Once Amended) A gate stack structure situated over a base monocrystalline silicon layer, said gate stack structure comprising:

a gate oxide layer on said base monocrystalline silicon layer;

a polysilicon gate layer on said gate oxide layer;

a layer of tungsten silicide on said polysilicon gate layer;

an undoped silicon dioxide cap on said layer of tungsten silicide;

a spacer over a lateral side of the gate layer and in contact with said base monocrystalline silicon layer, said spacer being composed of a material that is one of silicon nitride and undoped silicon dioxide and being made from the same material as the undoped silicon dioxide cap, wherein the lateral side of the gate layer is oriented perpendicular to said base monocrystalline silicon layer,

a contact plug in contact with said base monocrystalline silicon layer and being:

composed of a second conductive material; and

situated adjacent to the gate layer; and

a layer of doped silicon dioxide being composed of a material selected from the group consisting of BPSG, PSG, and BSG, and being situated over said spacer, over said undoped silicon dioxide cap, and in contact with said contact plug.

cont  
A23



11. (Unchanged) A gate structure comprising:

a pair of gate stacks situated over a base semiconductor material layer, each said gate stack comprising:

a gate oxide layer on said base semiconductor material layer;

a gate layer, composed of a first conductive material, on said gate oxide layer;

a layer of refractory metal silicide on said gate layer;

an undoped silicon dioxide cap on said layer of refractory metal silicide; and

a spacer in contact with a lateral side of each said gate stack and with said base semiconductor material layer, said spacer being composed of a nonconductive material, each said lateral side of each said gate stack being perpendicular to said base semiconductor material layer;

a contact plug in contact with said base semiconductor material layer composed of a second conductive material, and being situated between said pair of gate stacks; and

a layer of doped silicon dioxide over said spacer, over said undoped silicon dioxide cap, and in contact with said contact plug.

12. (Unchanged) A gate structure as recited in Claim 11, wherein said nonconductive material is composed of silicon nitride.

C3  
cont.  
A3

C3  
Conclude

13. (Once Amended) The gate structure as recited in Claim 11, wherein:  
said nonconductive material is composed of undoped silicon dioxide; and  
each said spacer is made from the same material as a respective one of said undoped  
silicon dioxide caps.

14. (Once Amended) The gate structure as recited in Claim 11, wherein the  
semiconductor material is monocrystalline silicon.

15. (Once Amended) The gate structure as recited in Claim 11, wherein said  
refractory metal silicide layer is tungsten silicide.

cont  
A2  
16. (Once Amended) The gate structure as recited in Claim 11, wherein said layer  
of doped silicon dioxide layer is composed of a material selected from the group consisting of BPSG,  
PSG, and BSG.

17. (Once Amended) The gate structure as recited in Claim 11, wherein the spacer  
is composed of a material that is one of silicon nitride and undoped silicon dioxide.

18. (Unchanged) A gate structure as defined in Claim 11, wherein the first conductive  
material is polysilicon.

Sub  
C4

19. (Once Amended) A gate structure comprising:  
a pair of gate stacks situated over a base monocrystalline silicon layer, each said gate stack comprising:

a gate oxide layer on said base monocrystalline silicon layer;

a polysilicon gate layer on said gate oxide layer;

a layer of tungsten silicide on said polysilicon gate layer;

an undoped silicon dioxide cap on said layer of tungsten silicide; and

a spacer over a lateral side of each said gate stack and in contact with said base monocrystalline silicon layer, said spacer being composed of undoped silicon dioxide and being made from the same material as the undoped silicon dioxide cap, wherein the lateral side of each said gate stack is oriented perpendicular to said base monocrystalline silicon layer;

a contact plug in contact with said base monocrystalline silicon layer and being composed of a second conductive material, and being situated between said pair of gate stacks; and

a layer of doped silicon dioxide over said spacer, over said undoped silicon dioxide cap, and in contact with said contact plug.

cont  
A3

20. (Unchanged) A gate structure comprising:

a pair of gate stacks situated over a base monocrystalline silicon layer, each said gate stack comprising:

a gate oxide layer on said base monocrystalline silicon layer;

a polysilicon gate layer on said gate oxide layer;

a layer of tungsten silicide on said polysilicon gate layer;

an undoped silicon dioxide cap on said layer of tungsten silicide; and

a spacer over a lateral side of each said gate stack and in contact with said base monocrystalline silicon layer, said spacer being composed of a material that is one of silicon nitride and undoped silicon dioxide, each said lateral side of each said gate stack being perpendicular to said base monocrystalline silicon layer;

a contact plug in contact with said base monocrystalline silicon layer and being composed of a second conductive material, and being situated between said pair of gate stacks; and

a layer of doped silicon dioxide over said spacer, over said undoped silicon dioxide cap, and in contact with said contact plug.